UNIVERSITI TEKNOLOGI MARA

CORRELATIONS BETWEEN 3D ANIMATION TEST SCORE, SPATIAL ABILITY AND COMPUTER EXPERIENCES AMONGST MULTIMEDIA MAJOR UNIVERSITY STUDENTS

SHARKAWI CHE DIN

Thesis submitted in fulfillment
of the requirements for the degree of
Doctor of Philosophy

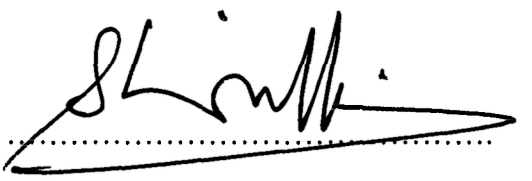
Faculty of Education

June 2013

AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the result of my own work, unless otherwise indicated or acknowledgement as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduates, Universiti Teknologi MARA, regulating the conduct of my study and research.

Name of Student	:	Sharkawi Che Din
Student I. D. No.	:	2005103008
Programme	:	ED990 Doctor of Philosophy
Faculty	:	Education
Thesis Title	:	Correlations Between 3D Animation Test Score, Spatial Ability and Computer Experiences Amongst Multimedia Major University Students
Signature of Student	:	
Date	:	June 2013

ABSTRACT

Deficits in spatial abilities, particularly Spatial Visualization and Spatial Rotation affect the performance of 3D Computer Animation among Multimedia major university students. Lacking of necessary spatial ability factors may affect students' performance in 3D Computer Animation. Some students experienced greater difficulties in performing a complicated visualization task required in creating three-dimensional (3D) objects and animation. The purpose of this study was to examine the relationship between Spatial Ability, Computer Experiences and the 3D Computer Animation performance among Multimedia major undergraduate students at Malaysian public university. In addition, this study also examined whether Spatial Ability could be used to predict students' performance in 3D Computer animation course. Specifically the study attempted, 1) to investigate the correlation between Spatial Rotation test score and students' performance in 3D Computer Animation test score among multimedia major undergraduate students, 2) to investigate the correlation between Spatial Visualization test score and students' performance in 3D Computer Animation test score among multimedia major undergraduate students, 3) to investigate the correlation between Computer Understanding and Experience Scale (CUE) and performance in 3D Computer Animation course among multimedia major undergraduate students, 4) to determine whether Spatial Ability is the possible predictors of successful performance of 3D Computer Animation course among multimedia major undergraduate students and, 5) to examine significant differences between Spatial Ability test score and a CUE test score based on demographics with their performance in 3D Computer Animation. The participants of this study were 188 (male = 52 and females = 136) Multimedia major students from six public universities. Five instruments were utilized in this study namely, 1) demographic questionnaire, 2) Spatial Ability psychometric test was adapted from the *Kit of Factor-Referenced Cognitive Tests (1976),* 3) Computer Understanding and Experience Scale questionnaire, 4) 3D Computer Animation test score and, 5) *STPM* and *SPM* academic transcripts. Analyzing the data using Pearson Correlations, it was found that there was a significant relationship between Spatial Rotation and Spatial Visualization with the performance of 3D Computer Animation. The Multiple Regression analysis revealed that Spatial Ability is a significant predictor for 3D Computer Animation performances. Overall, Spatial Ability was found to be predictive of 3D Computer Animation performance among Multimedia major students. Additionally, gender, race and academic backgrounds were found to be highly significant for successful comprehension of 3D Computer Animation course. The coefficient of determination R^2 of the Spatial Ability showed 47.4% of the variance in the 3D Computer Animation test score.

ACKNOWLEDGEMENTS

First and foremost, I would like to express my highest appreciation to my supervisor, Prof. Dr. Hj. Fattawi Mokhtar, for his valuable ideas, suggestion, guidance and advices.

I would like to extend my deepest appreciations to all respective Public Universities namely, Universiti Utara Malaysia, Universiti Teknologi MARA, Universiti Sains Malaysia, Universiti Malaysia Sarawak, Universiti Pendidikan Sultan Idris, Universiti Tun Hussein Onn and everyone who helped me to complete this research. Without their commitments, enthusiasms and efforts, this thesis would not have been as successful.

Lastly, my biggest thank to my beloved wife, Mrs Noralizah Bt. Mohd Nor, and my beautiful sons and daughter, Irfan B. Sharkawi, Afiq B. Sharkawi and Arissa Bt. Sharkawi for their sustained support in completing the study.

TABLE OF CONTENTS